HAZMAT

Planning and Tactical Response to Coastal Pollution

NOAA's Hazardous Materials Response Division strives to reduce risks to coastal habitats and resources from oil and hazardous chemical spills. HAZMAT draws on two decades of experience in responding to oil spill emergencies. Equally important are the advances that HAZMAT scientists have made in improving the state of knowledge about the best methods to protect the nation's coastal zone. These advances include HAZMAT's internationally recognized CAMEO® program, with its over 5,000 users worldwide; national guidelines for spill cleanup; and hydrodynamic and trajectory spill models that set a national standard for operational presentation of pollutant movement and spreading in the environment. HAZMAT's response to spill emergencies has gained a reputation for rapid, well-thought-out, yet cost-effective environmental protection decisions. HAZMAT strives to advance the state of knowledge about oil and hazardous materials interactions and effects in coastal environments by integrating response efforts with research, development, and international technology transfer.

HAZMAT's spill response efforts encompass virtually every U.S. coast, including Trust Territories, the Great Lakes, the Gulf of Mexico, Alaska, and Hawaii. NOAA scientists work closely with Federal On-Scene Coordinators to respond to about 100 accidental spills each year. In the last decade, major spill responses have included the 1989 *Exxon Valdez* in Prince William Sound, the 1995 *Morris J. Berman* spill off Puerto Rico, the *North Cape-Scandia* spill off the Rhode Island coast in the winter of 1996, the 1997 *Kuroshima* spill off Dutch Harbor, Alaska, and the 1999 *New Carissa* spill off the Oregon coast. HAZMAT's expertise has also been sought internationally, ranging from the 1978 *Amoco Cadiz* spill off France to the 1991 Arabian Gulf oil well fires and oil spills, the 1996 *San Jorge* spill off Uruguay, and the *Nakhodka* spill off Japan in 1997.

HAZMAT provides critical advice on science and other natural resource issues to the On-Scene Coordinator during the Federal government's responses to coastal oil and hazardous materials spills. At each spill, HAZMAT's interdisciplinary scientific team works with industry and local governments to select cost-effective, scientifically and economically sound cleanup plans. Scientific Support Coordinators lead the HAZMAT team at spills, drawing on the scientific support team's spill trajectory estimates, chemical hazards analyses, and assessments of the sensitivity of biological and human-use resources to help the OSC make timely operational decisions.

HAZMAT's unprecedented, multi-year *Exxon Valdez* spill response illustrates NOAA's unique ability to combine operational, real-time response with useful research. NOAA's work in 1989 during the operational phase of the spill response laid the foundation for the ten-year shoreline impact studies that began in 1990. These studies evaluate intertidal and shallow subtidal habitat impacts from oiling and shoreline treatment, and assess the influence of oil and mechanical treatment actions on the nature and rate of shoreline recovery. Changes in the chemical properties of oil stranded in shorelines are also being investigated.

Each week, HAZMAT scientists apply the knowledge from this and other response research to help minimize the environmental consequences of spills. A case in point is the *New Carissa* spill off Coos Bay, Oregon

Courtesy NorthWest Cable News, Seattle; KGW8, Portland

Oil burning from the New Carissa, grounded off the Oregon coast, February, 1999.

in February 1999, in which NOAA's applied research on in-situ burning supported the Coast Guard's decision to burn the oil on the grounded vessel. HAZMAT's smoke plume trajectory was used with other models input to predict the direction and magnitude of the smoke plume from the burning ship. The interagency SMART monitoring program, of which HAZMAT is a major contributor, provided data on smoke particulate concentrations at ground level. The burn prevented much of the vessel's 400,000 gallons of oil from coming ashore on Oregon beaches.

Environmental Sensitivity Index atlases are a primary resource used both for planning and during operational spill responses. These atlases show locations of valuable coastal habitats and resources, and characterize shorelines and habitats according to their vulnerability to oiling. Maps for virtually the entire U.S. shoreline, including Hawaii, Alaska, and the Great Lakes, are available both in hard copy and digital format. HAZMAT has proposed a national standard for presenting these data compatible with Geographic Information System software. In 1999 HAZMAT will produce new and updated sensitivity maps for the upper Texas coast, Alabama, Mississippi, Georgia, North Carolina, the Delaware Bay region, Florida, South Carolina, Massachusetts, and San Francisco Bay. Many of these maps are available on CD-ROM, both in portable document-format (PDF) or as GIS-compatible data.

HAZMAT's CAMEO® computer software, co-developed with EPA, is an integrated set of software modules that is designed to help first responders and emergency planners plan for and safely respond to chemical accidents. The CAMEO system includes a hazardous chemicals database, MARPLOT®, a map display application, and ALOHA®, an application for estimating the movement of hazardous chemical clouds in the atmosphere.

As part of a broad National Ocean Service effort, HAZMAT is managing navigation safety and efficiency projects in San Francisco Bay, Puget Sound, and Cook Inlet and Prince William Sound, Alaska. These projects work with the local maritime community to improve NOS products and services by addressing local concerns, develop technological bridges to NOS product, and promote a coordinated effort to develop creative, efficient solutions to local problems and issues.

The legislative authorities for Federal responses to releases of oil are the Clean Water Act; the Comprehensive Environmental Response, Compensation, and Liability act of 1980 (Superfund);the Superfund Amendments and Reauthorization Act of 1986; and the Oil Pollution Act of 1990. These acts are implemented through the National Oil and Hazardous Substances Pollution Contingency Plan.

Each year HAZMAT provides training to about 100 industry, local government, and Federal agency personnel in the scientific aspects of oil and chemical spill response. This training helps transfer the knowledge and experience of HAZMAT scientists to the broadest possible audience.

For additional information, visit our website at
http://response.restoration.noaa.gov

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